

## SEQUENCE LISTING

<110> DSM NV

<120> Improved method for the prevention or reduction of haze in  
beverages.

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<160> 7

<170> PatentIn Ver. 2.1

<210> 1

<211> 1581

<212> DNA

<213> Aspergillus niger

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<213> *Aspergillus niger*

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<211> 1581

<212> DNA

<213> *Aspergillus niger*

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&lt;210&gt; 4

&lt;211&gt; 526

&lt;212&gt; PRT

&lt;213&gt; Aspergillus niger

&lt;400&gt; 4

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20 25 30

Ser Arg Pro Ala Ser Ser Lys Ser Ala Ala Thr Thr Gly Glu Ala Tyr

35 40 45

Phe Glu Gln Leu Leu Asp His His Asn Pro Glu Lys Gly Thr Phe Ser

50 55 60

Gln Arg Tyr Trp Trp Ser Thr Glu Tyr Trp Gly Gly Pro Gly Ser Pro

65 70 75 80

Val Val Leu Phe Asn Pro Gly Glu Val Ser Ala Asp Gly Tyr Glu Gly

85 90 95

Tyr Leu Thr Asn Asp Thr Leu Thr Gly Val Tyr Ala Gln Glu Ile Gln

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Gly Ala Val Ile Leu Ile Glu His Arg Tyr Trp Gly Asp Ser Ser Pro  
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Tyr Glu Val Leu Asn Ala Glu Thr Leu Gln Tyr Leu Thr Leu Asp Gln  
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Ser Ile Leu Asp Met Thr Tyr Phe Ala Glu Thr Val Lys Leu Gln Phe  
145 150 155 160

Asp Asn Ser Ser Arg Ser Asn Ala Gln Asn Ala Pro Trp Val Met Val  
165 170 175

Gly Gly Ser Tyr Ser Gly Ala Leu Thr Ala Trp Thr Glu Ser Ile Ala  
180 185 190

Pro Gly Thr Phe Trp Ala Tyr His Ala Thr Ser Ala Pro Val Glu Ala  
195 200 205

Ile Tyr Asp Phe Trp Gln Tyr Phe Tyr Pro Ile Gln Gln Gly Met Ala  
210 215 220

Gln Asn Cys Ser Lys Asp Val Ser Leu Val Ala Glu Tyr Val Asp Lys  
225 230 235 240

Ile Gly Lys Asn Gly Thr Ala Lys Glu Gln Gln Glu Leu Lys Glu Leu  
245 250 255

Phe Gly Leu Gly Ala Val Glu His Tyr Asp Asp Phe Ala Ala Val Leu  
260 265 270

Pro Asn Gly Pro Tyr Leu Trp Gln Asp Asn Asp Phe Val Thr Gly Tyr  
275 280 285

Ser Ser Phe Phe Gln Phe Cys Asp Ala Val Glu Gly Val Glu Ala Gly  
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Ala Ala Val Thr Pro Gly Pro Glu Gly Val Gly Leu Glu Lys Ala Leu

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Ala Asn Tyr Ala Asn Trp Phe Asn Ser Thr Ile Leu Pro Asn Tyr Cys

325            330            335

Ala Ser Tyr Gly Tyr Trp Thr Asp Glu Trp Ser Val Ala Cys Phe Asp

340            345            350

Ser Tyr Asn Ala Ser Ser Pro Ile Phe Thr Asp Thr Ser Val Gly Asn

355            360            365

Pro Val Asp Arg Gln Trp Glu Trp Phe Leu Cys Asn Glu Pro Phe Phe

370            375            380

Trp Trp Gln Asp Gly Ala Pro Glu Gly Thr Ser Thr Ile Val Pro Arg

385            390            395            400

Leu Val Ser Ala Ser Tyr Trp Gln Arg Gln Cys Pro Leu Tyr Phe Pro

405            410            415

Glu Val Asn Gly Tyr Thr Tyr Gly Ser Ala Lys Gly Lys Asn Ser Ala

420            425            430

Thr Val Asn Ser Trp Thr Gly Gly Trp Asp Met Thr Arg Asn Thr Thr

435            440            445

Arg Leu Ile Trp Thr Asn Gly Gln Tyr Asp Pro Trp Arg Asp Ser Gly

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Val Ser Ser Thr Phe Arg Pro Gly Gly Pro Leu Val Ser Thr Ala Asn

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Glu Pro Val Gln Ile Ile Pro Gly Gly Phe His Cys Ser Asp Leu Tyr

485            490            495

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<212> PRT

<213> Aspergillus niger

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30

Ser Arg Pro Ala Ser Ser Lys Ser Ala Ala Thr Thr Gly Glu Ala Tyr

35

40

45

Phe Glu Gln Leu Leu Asp His His Asn Pro Glu Lys Gly Thr Phe Ser

50

55

60

Gln Arg Tyr Trp Trp Ser Thr Glu Tyr Trp Gly Gly Pro Gly Ser Pro

65

70

75

80

Val Val Leu Phe Thr Pro Gly Glu Val Ser Ala Asp Gly Tyr Glu Gly

85

90

95

Tyr Leu Thr Asn Gly Thr Leu Thr Gly Val Tyr Ala Gln Glu Ile Gln

100

105

110

Gly Ala Val Ile Leu Ile Glu His Arg Tyr Trp Gly Asp Ser Ser Pro

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120

125

Tyr Glu Val Leu Asn Ala Glu Thr Leu Gln Tyr Leu Thr Leu Asp Gln

130

135

140



Ala Ile Leu Asp Met Thr Tyr Phe Ala Glu Thr Val Lys Leu Gln Phe

145            150            155            160

Asp Asn Ser Thr Arg Ser Asn Ala Gln Asn Ala Pro Trp Val Met Val

165            170            175

Gly Gly Ser Tyr Ser Gly Ala Leu Thr Ala Trp Thr Glu Ser Val Ala

180            185            190

Pro Gly Thr Phe Trp Ala Tyr His Ala Thr Ser Ala Pro Val Glu Ala

195            200            205

Ile Tyr Asp Tyr Trp Gln Tyr Phe Tyr Pro Ile Gln Gln Gly Met Ala

210            215            220

Gln Asn Cys Ser Lys Asp Val Ser Leu Val Ala Glu Tyr Val Asp Lys

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Ile Gly Lys Asn Gly Thr Ala Lys Glu Gln Gln Ala Leu Lys Glu Leu

245            250            255

Phe Gly Leu Gly Ala Val Glu His Phe Asp Asp Phe Ala Ala Val Leu

260            265            270

Pro Asn Gly Pro Tyr Leu Trp Gln Asp Asn Asp Phe Ala Thr Gly Tyr

275            280            285

Ser Ser Phe Phe Gln Phe Cys Asp Ala Val Glu Gly Val Glu Ala Gly

290            295            300

Ala Ala Val Thr Pro Gly Pro Glu Gly Val Gly Leu Glu Lys Ala Leu

305            310            315            320

Ala Asn Tyr Ala Asn Trp Phe Asn Ser Thr Ile Leu Pro Asp Tyr Cys

325            330            335

Ala Ser Tyr Gly Tyr Trp Thr Asp Glu Trp Ser Val Ala Cys Phe Asp  
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Ser Tyr Asn Ala Ser Ser Pro Ile Tyr Thr Asp Thr Ser Val Gly Asn  
355 360 365

Ala Val Asp Arg Gln Trp Glu Trp Phe Leu Cys Asn Glu Pro Phe Phe  
370 375 380

Tyr Trp Gln Asp Gly Ala Pro Glu Gly Thr Ser Thr Ile Val Pro Arg  
385 390 395 400

Leu Val Ser Ala Ser Tyr Trp Gln Arg Gln Cys Pro Leu Tyr Phe Pro  
405 410 415

Glu Thr Asn Gly Tyr Thr Tyr Gly Ser Ala Lys Gly Lys Asn Ala Ala  
420 425 430

Thr Val Asn Ser Trp Thr Gly Gly Trp Asp Met Thr Arg Asn Thr Thr  
435 440 445

Arg Leu Ile Trp Thr Asn Gly Gln Tyr Asp Pro Trp Arg Asp Ser Gly  
450 455 460

Val Ser Ser Thr Phe Arg Pro Gly Gly Pro Leu Ala Ser Thr Ala Asn  
465 470 475 480

Glu Pro Val Gln Ile Ile Pro Gly Gly Phe His Cys Ser Asp Leu Tyr  
485 490 495

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Glu Val Lys Gln Ile Lys Glu Trp Val Glu Glu Tyr Tyr Ala  
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<211> 1551

<212> DNA

<213> *Aspergillus niger*

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<210> 7

<211> 516

&lt;212&gt; PRT

&lt;213&gt; Aspergillus niger

&lt;400&gt; 7

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Ala Ser Leu Ala Gln Ala Ala Arg Pro Arg Leu Val Pro Lys Pro Ile

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Ser Arg Pro Ala Ser Ser Lys Ser Ala Ala Thr Thr Gly Glu Ala Tyr

35 40 45

Phe Glu Gln Leu Leu Asp His His Asn Pro Glu Lys Gly Thr Phe Ser

50 55 60

Gln Arg Tyr Trp Trp Ser Thr Glu Tyr Trp Gly Gly Pro Gly Ser Pro

65 70 75 80

Val Val Leu Phe Asn Pro Gly Glu Val Ser Ala Asp Gly Tyr Glu Gly

85 90 95

Tyr Leu Thr Asn Asp Thr Leu Thr Gly Val Tyr Ala Gln Glu Ile Gln

100 105 110

Gly Ala Val Ile Leu Ile Glu His Arg Tyr Trp Gly Asp Ser Ser Pro

115 120 125

Tyr Glu Val Leu Asn Ala Glu Thr Leu Gln Tyr Leu Thr Leu Asp Gln

130 135 140

Ser Ile Leu Asp Met Thr Tyr Phe Ala Glu Thr Val Lys Leu Gln Phe

145 150 155 160

Asp Asn Ser Ser Arg Ser Asn Ala Gln Asn Ala Pro Trp Val Met Val

165 170 175

Gly Gly Ser Tyr Ser Gly Ala Leu Thr Ala Trp Thr Glu Ser Ile Ala

180 185 190

Pro Gly Thr Phe Trp Ala Tyr His Ala Thr Ser Ala Pro Val Glu Ala

195 200 205

Ile Tyr Asp Phe Gln Gly Met Ala Gln Asn Cys Ser Lys Asp Val Ser

210 215 220

Leu Val Ala Glu Tyr Val Asp Lys Ile Gly Lys Asn Gly Thr Ala Lys

225 230 235 240

Glu Gln Gln Glu Leu Lys Glu Leu Phe Gly Leu Gly Ala Val Glu His

245 250 255

Tyr Asp Asp Phe Ala Ala Val Leu Pro Asn Gly Pro Tyr Leu Trp Gln

260 265 270

Asp Asn Asp Phe Val Thr Gly Tyr Ser Ser Phe Phe Gln Phe Cys Asp

275 280 285

Ala Val Glu Gly Val Glu Ala Gly Ala Ala Val Thr Pro Gly Pro Glu

290 295 300

Gly Val Gly Leu Glu Lys Ala Leu Ala Asn Tyr Ala Asn Trp Phe Asn

305 310 315 320

Ser Thr Ile Leu Pro Asn Tyr Cys Ala Ser Tyr Gly Tyr Trp Thr Asp

325 330 335

Glu Trp Ser Val Ala Cys Phe Asp Ser Tyr Asn Ala Ser Ser Pro Ile

340 345 350

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355 360 365

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385            390            395            400  
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405            410            415  
Ser Ala Lys Gly Lys Asn Ser Ala Thr Val Asn Ser Trp Thr Gly Gly  
420            425            430  
Trp Asp Met Thr Arg Asn Thr Thr Arg Leu Ile Trp Thr Asn Gly Gln  
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Tyr Asp Pro Trp Arg Asp Ser Gly Val Ser Ser Thr Phe Arg Pro Gly  
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Gly Pro Leu Val Ser Thr Ala Asn Glu Pro Val Gln Ile Ile Pro Gly  
465            470            475            480  
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485            490            495  
Gly Val Arg Lys Val Val Asp Asn Glu Val Lys Gln Ile Lys Glu Tyr  
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Gly Tyr Gly Cys  
515